Algebra 2 - Exponentials and Logs Problem Set

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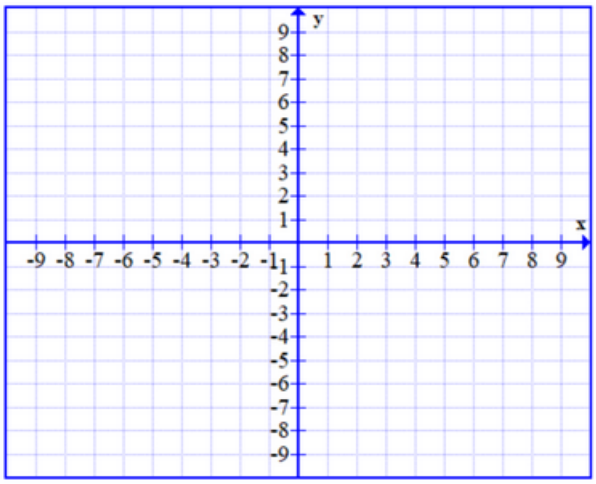
1. Given the transformations of the base exponential function $f(x) = 0.7^x$, write the transformed function $g(x)$. $f(x)$ is vertically stretched by a factor of 3, reflected across the x-axis, and translated two units left.

2. Graph the function $f(x) = 2\log_3 x - 1$. State the domain and range of this function.



3. Expand $\log_3\left(\frac{27x^2}{y^4z}\right)$.

4. Find the inverse of $f(x) = 2\log_7(x) - 9$.

5. Condense $\frac{2}{3}\log_4(125) + 2\log_4(x) + 3\log_4(y) - \frac{1}{2}\log_4(25)$.

6. Solve $\log_6(x+2) = 1 + \log_6(x-3)$ for x.

7. Solve $3^{2x} = 81$ for x by rewriting the base.

8. Solve $5^{4x-2} = 2^{3-2x}$ for x by using the inverse operation.

9. Solve $\frac{1}{3}\ln(x) + \ln(2) - \ln(3) = 3$ for x.

10. Find the time needed to make \$1000 from an initial investment of \$750 compounded continuously with a 2.5% interest rate.

11. In 1910, the population of a city was 120,000. Since then, the population has increased by 1.5% per year. If the population continues to grow at this rate, what will the population be in 2015?

12. The cost of tuition at a college is \$12,000 and is increasing at a rate of 6% per year. How much will tuition cost after 4 years and when will the tuition be \$20,000?